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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,140	08/29/2003	Gary L. Graunke	ITL0896US (P14859)	1168
21906 7590 02/22/2007 TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			EXAMINER PERUNGA VOOR, VENKATANARAY	
			ART UNIT 2132	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS			MAIL DATE 02/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/652,140

Applicant(s)

GRAUNKE, GARY L.

Examiner

Venkat Perungavoor

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/31/2003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **ETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Source Code Transformation based on Program Operators.

### ***Claim Objections***

2. Examiner believes Claim 3 should read "...using at least one of said complier-generated operator...". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3,18, recites the limitation "complier-generated operator" in line 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Publication 2004/0115860 A1 to Johnson et al.(hereinafter Johnson).
6. Regarding Claim 9, Johnson discloses the analyzing the data flow in the source code having one or more operators to determine matching references of pair of variables see Par. 0021; determining a block of the source code in which pair of variable is not used see Par. 0021; associating the matching reference based on heuristic to provide data encryption to modify a portion of the source code into encrypted compiler-generated code see Par. 0022; mixing the compiler-generated code with source code see Par. 0024.
7. Regarding Claim 10, Johnson discloses the detecting the first and second variables in which use of stored values for pair of variables for first and second regions see Par. 0025-0026.
8. Regarding Claim 11, Johnson discloses the utilizing of heuristic to enhance obfuscation of encrypting compiler-generated code see Par. 0029.
9. Regarding Claim 12, Johnson discloses the identifying the first and second reference point within a set of blocks having operators see Par. 0026; associating an encryption code in proximity to the first reference point and associating a decryption code in proximity to the second reference point see Par. 0021;

compiling a portion of code into encrypting compiler-generated code to mix with the source code see Par. 0024-0025.

10. Regarding Claim 13, Johnson discloses the customizing a cipher based on program operators see Par. 0023; selecting a block from a set of blocks, the block containing a first variable having a maximum distance over set blocks and second variable having a next maximal distance in the same block see Par. 0066; providing the encryption code to encrypt data in between a pair of references to first and second variables see Par. 0067-0068; providing the decryption code to decrypt data see Par. 0070.

11. Regarding Claim 14, Johnson discloses the recompiling the encrypting compiler-generated code with the source code into tamper resistant object code see Par. 0020.

12. Regarding Claim 15, Johnson discloses the deriving from the source code a compiler-generated operator for data flow transformation see Par. 0019; using the compiler-generated code and source code to provide the encryption code see Par. 0024.

13. Regarding Claim 20, Johnson discloses the analyzer to perform data flow analysis of source code to dynamically obtain program operators see Par. 0021;

code transformer coupled to the analyzer to apply data transformation to select region of source code to provide encrypting compiler-generated code based on operators see Par. 0019.

14. Regarding Claim 21, 25, Johnson discloses the cipher based on program operators see Par. 0020.

15. Regarding Claim 22, 26, Johnson discloses the engine to encrypt/decrypt the selected region based on references to variable identified in the selected region see Par. 0026.

16. Regarding Claim 23, 27, Johnson discloses the heuristic to select the selected region and the references see Par. 0032-0034.

17. Regarding Claim 24, Johnson discloses the DRAM having the source code see Pr. 0079; analyzer to perform data flow analysis of source code to dynamically obtain program operators see Par. 0021; code transformer coupled to the analyzer to apply data transformation to select region of source code to provide encrypting compiler-generated code based on operators see Par. 0019.

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2132

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1-5, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6931634 to Croix in view of US Patent 5339419 to Chan et al. (hereinafter Chan).

20. Regarding Claim 1, 16, Croix discloses the applying of transformation to portion of source to provide a encrypting compiler generated code see Col 3 Ln 62-Col 4 Ln 4 & Fig.1-2. But Croix does not disclose the obtaining of operators from the code and transforming the code based on the operators. However, Chan discloses the obtaining of operators from the code and transforming based on the operators see Col 11 Ln 37-46 & Col 12 Ln 67- Col 13 Ln 20. Chan's invention involves converting an source code into an intermediate code, ANDF, based source code that the compiler processes, HPcode-Plus, thereby generating an assembly code that is independent of machines. It would be obvious to one having ordinary skill in the art at the time of the invention to include the obtaining of operators from the code and transforming based on the operators in the invention of Croix in order to have an standardized encryption process that is secure and unique to the code as taught in Chan see Col 47 Ln 8-15 & Col 13 Ln 5-31.

21. Regarding Claim 2, 17, Croix discloses an sub-file from a file which is encrypted with the file generate an encrypted compiler generated code see Abstract & Col 2 Ln 23-51.
22. Regarding Claim 3-5, 18-19, Croix does not explicitly disclose the deriving from source code a complier-generated operator for data transformation. But Chan discloses the deriving from source code a complier-generated operator to be used for encryption see Col 4 Ln 27-37 & Col 3 Ln 10-20. And further, the intermediate instructions convert directly to thelt would be obvious to one having ordinary skill in the art at the time of the invention to include the deriving from source code a complier-generated operator to be used for encryption in the invention of Croix in order to increase low-level security as taught in Chan see Col 4 Ln 38-45.
23. Claims 6-8, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6931634 to Croix in view of US Patent 5339419 to Chan et al.(hereinafter Chan) further in view of US patent 2004/0115860 to Johnson et al.
24. Regarding Claim 6, Croix nor Chan explicitly discloses two references for each variable pair to encrypt and decrypt between two references, and associating two data values with each variable pair for encryption and decryption. However, Johnson discloses the two references for each variable pair to encrypt and



decrypt between two references, and associating two data values with each variable pair for encryption and decryption see Par. 0021. It would be obvious to one having ordinary skill in the art at the time of the invention to include the two references for each variable pair to encrypt and decrypt between two references, and associating two data values with each variable pair for encryption and decryption in the invention of Croix in order to iteratively encrypt the data as taught in Johnson see Par. 0022.

25. Regarding Claim 7-8, Croix nor Chan explicitly discloses the iteratively forming matching pairs of data values for each variable pair and further of creating interlocking Feistel networks in each iteration. However, Johnson discloses the iteratively forming matching pairs of data values for each variable pair and further of creating interlocking Feistel networks in each iteration see Par. 0022 & Par. 0028. Further, Johnson discloses the enabling of detection of usage of one or more redundant computations and in response to change in network provisioning for corruption of unrelated data values relative to data values see Par. 0025-0028. It would be obvious to one having ordinary skill in the art at the time of the invention to include the Feistel networks for pair of variables in detection of usage of redundant instances in the invention of Croix in order to disrupt automated analysis of data flow as taught in Johnson see Par. 0029.

**Conclusion**

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See Notice of Reference Cited

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Venkat Perungavoor whose telephone number is 571-272-7213. The examiner can normally be reached on 8:30-5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

28. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner  
Art Unit 2132

  
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